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ABSTRACT OF THE DISCLOSURE

A method of desulfurizing/refining a hydrocarbon oil by which sulfur compounds are diminished to an extremely low concentration at a relatively low equipment cost and operating cost. The method of desulfurizing/refining a hydrocarbon oil comprises bringing a hydrocarbon oil containing at least one sulfur compound selected from the group consisting of thiophene compounds, benzothiophene compounds, and dibenzothiophene compounds and optionally further containing aromatic hydrocarbons into contact with a solid acid catalyst and/or an activated carbon having a transition metal oxide supported thereon to thereby desulfurize the oil. The solid acid catalyst preferably is a solid ultrastrong-acid catalyst selected among sulfuric acid radical/zirconia, sulfuric acid radical/alumina, sulfuric acid radical/tin oxide, sulfuric acid radical/iron oxide, tungstic acid/zirconia, and tungstic acid/tin oxide.